

# Simple Processor

## Author

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## Work

We implemented some basic functionalities of a processor. Only implemented the following R-type and I-type instructions in this project:

*add, addi, sub, and, or, sll, sra, sw, and lw.*

## Standard

The instruction machine code format is provided, which is a **special version (different from common used version)**. The difference caused different datapath. The instruction format is shown below:

### Instruction Machine Code Format

Instruction Type	Instruction Format						
R							
	Opcode [31:27]	\$rd [26:22]	\$rs [21:17]	\$rt [16:12]	shamt [11:7]	ALU op [6:2]	Zeroes [1:0]
I							
	Opcode [31:27]	\$rd [26:22]	\$rs [21:17]	Immediate (N) [16:0]			

## Implementation

Below is our circuit design, including the Imem, Dmem, Regfile and Processor.

